

Claims:

1. A slurry expressing and liquid displacing device, for expressing slurry and then separating out effluence and solid of the slurry through radial pore volume displacement of continuous washing, the slurry expressing and liquid displacing device comprising:

- a expressing mechanism, comprising a driving motor, a transportation tube, and a first helical transmission shaft rotatably connected with the driving motor, the transportation tube having an inlet at an end thereof near the driving motor and an outlet at the other end thereof and a plurality of screens located at least on the periphery surface near the outlet, the first helical transmission shaft having a transportation zone at an end thereof near the inlet and a compression zone at the other end;
- a displacing mechanism, disposed in the transportation tube and comprising a second helical transmission shaft rotatably connected with the first helical transmission shaft, the second helical transmission shaft being hollow with a plurality of through holes being defined at the side surface thereof, a connecting port being formed at an end of the second helical transmission shaft;
- a blender formed at the rear of the displacing mechanism and in the transportation tube corresponding to the outlet;
- a collecting tube, disposed at the outside of the transportation tube between the compression zone and the displacing mechanism and kept properly spaced from the transportation tube for collecting and guiding effluence and solid of the slurry ;
- a first storage trough, near the compression zone and in communication with the collecting tube; and
- a second storage trough, corresponding to the blender and in communication with the transportation tube.

2. The slurry expressing and liquid displacing device as claimed in claim 1, the screens of the transportation tube are substantially located opposite to the collecting tube for providing the effluence of slurry from the

transportation tube.

3. The slurry expressing and liquid displacing device as claimed in claim 1, further comprising a slanting bracket fixing and supporting the transportation tube at a slanting manner that the expressing mechanism locates lower and the displacing mechanism locates upper.
4. The slurry expressing and liquid displacing device as claimed in claim 3, wherein the expressing and filtrating functions of the compression zone of the first helical transmission shaft are realized by the different shaft diameters thereof which are gradually increased.
5. The slurry expressing and liquid displacing device as claimed in claim 3, wherein the expressing and filtrating functions of the compression zone of the first helical transmission shaft are realized by gradually reduced pitches of screws thereof.
6. The slurry expressing and liquid displacing device as claimed in claim 3, wherein the compressing and filtrating functions of the compression zone of the first helical transmission shaft are realized by gradually increased shaft diameters thereof and gradually reduced pitches of screws thereof.
7. The slurry expressing and liquid displacing device as claimed in claim 1, wherein the first and second helical transmission shafts are integrally formed.
8. The slurry expressing and liquid displacing device as claimed in claim 1, wherein space between the through holes of the second helical transmission shaft is generally 0.5 mm.
9. The slurry expressing and liquid displacing device as claimed in claim 1, wherein each through hole of the second helical transmission shaft is formed with a slanting angle.
10. The slurry expressing and liquid displacing device as claimed in claim 1, wherein the expressing mechanism and the displacing mechanism are generally perpendicular to each other, that is the expressing mechanism is configured along axis X and the displacing mechanism is along axis Y.